

# Trapping of small mammals in relation to the vegetation types in the Kyasanur forest disease area, Mysore State, India<sup>1</sup>

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During the course of investigation of Kyasanur Forest Disease (KFD), several isolations of KFD virus were obtained from the organs of wild caught small mammals and their tick ectoparasites (Boshell *et al.* 1968 a & b; Rajagopalan *et al.* 1969). Since this indicated a possible involvement of small mammals in the natural cycle of KFD, attempts were made to study the relationship between small mammals and vegetation types, with a view to understand the interrelationship between vectors, hosts and habitats in the Kyasanur Forest Disease area.

## MATERIALS AND METHODS

Four different areas each having one or more habitat types were selected for trapping the small mammals. These areas were located near the villages of Kuruvari, Balagodu, Kalkoppa and Kangodu. The different habitat types selected for trapping are shown in Table 1. In areas around Kuruvari and Balagodu, the trapping was done from May 1969 to April 1970; in areas around Kalkoppa, from August 1969 to April 1970, and in areas around Kangodu, from Sept. 1969 to April 1970. Eighty to one hundred sherman traps were set in marked places 30 to 40 ft. apart with 'pakoda' as a bait. The traps were left overnight and collected on the following morning. The trapped small mammals were released after identification.

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## DESCRIPTION OF AREAS

## Kuruvari :

This trapping area consists of semi-evergreen forest, scrub forest, edge of the forest and paddy field. The semi-evergreen forest is composed of tall trees and thick undergrowth, providing a good uninterrupted ground cover. The top soil consists of dead and decaying leaves and other forest litter. Scrub forest encircles the semi-evergreen forest on three sides. Here the ground cover is sparse and consists mainly of wild date palm (*Phoenix* sp.) and a few short trees. This leaves considerable areas of the ground exposed and open. The paddy field is situated in the shallow valley and has a terraced appearance. The edge of the forest which runs along the paddy field is an abrupt end of the semi-evergreen forest.

## Balagodu :

This study area includes the edge of a semi-evergreen forest with large thickets of lantana (*Lantana aculeata*), and a paddy field.

## Kalkoppa :

Here the trapping was done in a teak plantation (*Tectona grandis*), which has a thick undergrowth composed mainly of lantana bushes.

## Kangodu :

Peridomestic areas was selected in a narrow patch of cleared zone adjacent to Kangodu village.

## RESULTS

In all 493 small mammals belonging to 8 species were trapped in 6810 trap nights. The composition of the species of small mammals, in the order of numerical abundance were : *Rattus rattus wroughtoni* (39.1%), *Suncus murinus* (35.9%), *Rattus blanfordi* (14.4%), *Mus* sp. (6.1%), *Rattus rufescens* (3.0%), *Funambulus tristriatus tristriatus* (1.0%), *Golunda ellioti* (0.2%) and *Tatera indica* (0.2%). Of the 8 species of small mammals trapped the relationship between the habitat types and the distribution could be assessed only for three species, viz., *Rattus r. wroughtoni*, *S. murinus* and *R. blanfordi*. The other species of small mammals were trapped in small numbers, and it was not possible to associate them with any habitat types.

Table 1 gives the distribution of small mammals according to the habitat types. The total number of small mammals trapped at the edge of the forest exceeded the number trapped from other habitat types. *Rattus r. wroughtoni* was trapped most frequently from semi-evergreen

TABLE 1  
 NUMBER AND SPECIES OF SMALL MAMMALS TRAPPED FROM FOUR LOCALITIES  
 ACCORDING TO HABITAT TYPES (NUMBERS IN THE PARENTHESIS GIVE THE PERCENTAGES)

Locality	Habitat types	No. of trap nights	R.r.w.	R.b.	S.m.	M.sp.	F.t.t.	R.r.	G.e.	T.i.	Total
KURUVARI	(1) Semi-evergreen forest	835	69 (84.1)	8 (9.7)	3 (3.6)	2 (2.4)	0	0	0	0	82
	(2) Scrub forest	779	12 (41.4)	5 (17.2)	4 (13.8)	8 (27.6)	0	0	0	0	29
	(3) Edge of semi-evergreen forest with scrub forest	286	9 (52.9)	4 (23.5)	0	4 (23.5)	0	0	0	0	17
	(4) Edge of semi-evergreen forest with paddy fields	700	9 (27.2)	4 (12.1)	15 (45.4)	3 (9.1)	0	0	1 (3.0)	1 (3.0)	33
	(5) Paddy fields	700	2 (4.1)	0	46 (93.9)	1 (2.0)	0	0	0	0	49
BALAGODU	(1) Edge of semi-evergreen forest with paddy fields	920	63 (51.6)	34 (27.9)	13 (10.7)	1 (0.1)	4 (3.3)	7 (5.7)	0	0	122
	(2) Paddy fields	920	2 (3.8)	0	41 (77.3)	6 (11.3)	0	4 (7.5)	0	0	53
KALKOPPA	Teak plantation	960	19 (51.3)	10 (27.0)	4 (10.8)	4 (10.8)	0	0	0	0	37
KANGODU	Peridomestic area	710	8 (11.3)	6 (8.4)	51 (71.8)	1 (1.4)	1 (1.4)	4 (5.6)	0	0	71
Total:		6810	193 (39.1)	71 (14.4)	177 (35.9)	30 (6.1)	5 (1.0)	15 (3.0)	1 (0.2)	1 (0.2)	493

R.r.w. = *Rattus rattus wroughtoni*  
 R.b. = *Rattus blanfordi*  
 S.m. = *Suncus murinus*  
 M.sp. = *Mus booduga* or *Mus cervicolor*  
 F.t.t. = *Funambulus tristriatus tristriatus*  
 R.r. = *Rattus rufescens*  
 G.e. = *Golunda ellioti*  
 T.i. = *Tatera indica*

forest (84.1% of small mammals trapped in this habitat type) and a lesser extent from the edge of the semi-evergreen forest (52.9%), teak plantation (51.3%) and scrub forest (41.4%). *S. murinus* formed 71.8% and 93.9% of small mammals trapped from peridomestic area and paddy fields respectively. Except for the edge of the forest along the paddy field at Kuruvari, in the other habitat types the trapping of *S. murinus* was considerably low. *R. blanfordi* was trapped more frequently in the lantana thickets of forest edge (27.9%) and teak plantation (27.0%) than in other habitat types.

### DISCUSSION

The trapping results of the present observations indicate a certain degree of preference in at least 3 species of small mammals to a particular habitat type. Though *Rattus r. wroughtoni* were trapped most frequently from the semi-evergreen forest at Kuruvari, to a lesser extent they were also trapped in the scrub forest and teak plantation. This species is known to inhabit the tree holes (Rajagopalan 1970). Therefore, the presence of large number of *Rattus r. wroughtoni* in semi-evergreen forest may have some bearing with the availability of tree holes in this habitat type. The trapping of large number of *S. murinus* from the paddy fields and peridomestic area, is an observation of considerable interest. Because, this habitat does not seem to favour other species of small mammals. The paddy fields also remain flooded during the monsoon months between June to September. The trapping of *S. murinus* in the paddy fields during monsoon months indicates that flooding does not affect their distribution. The only other habitat where *S. murinus* was trapped in considerable number was the edge of the semi-evergreen forest adjacent to the paddy fields at Kuruvari. Another observation of some interest is the trapping of more *R. blanfordi* from the lantana-covered edge of the forest and teak plantation. This gives a slight indication of their preference to the thickets.

Constant exploitations by man over several years have brought about marked ecological changes in the Kyasanur Forest Disease area. While analyzing the results of this nature one should ponder over the possibility of several factors responsible for the distribution of small mammals, such as: availability of food, shelter, presence or absence of predators etc. However, not much information is available on this aspect for most of the species. Perhaps a more intensive study giving consideration to the several parameters, may reveal the complex nature of inter-relationship between the small mammals and their habitats.

## SUMMARY

Four hundred and ninety-three small mammals belonging to 8 species were trapped at different habitat types in the Kyasanur Forest Disease area. The habitat types selected for the study were : semi-evergreen forest, scrub forest, edge of the forest, paddy fields, teak plantation and peridomestic area. While 84.1% of small mammals trapped in the semi-evergreen forest was *Rattus r. wroughtoni*, *S. murinus* formed 71.8% and 93.9% of small mammals trapped at peridomestic area and paddy fields respectively. *R. blanfordi* were trapped more frequently in the lantana thickets along the edge of the forest and teak plantation, where it formed 27.9% and 27.0% respectively of the small mammals trapped in these regions.

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